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(12) **United States Patent**
Roth

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(54) **SEPARATOR, SEPARATING DEVICE WITH SUCH A SEPARATOR, AND VACUUM CLEANER, ESPECIALLY WET VACUUM CLEANER, WITH SUCH A SEPARATOR OR SUCH A SEPARATING DEVICE**

(58) **Field of Classification Search**
CPC A47L 9/1683; A47L 9/106; A47L 9/102;
A47L 9/181; A47L 9/188; B01D 46/0005
See application file for complete search history.

(56) **References Cited**

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U.S. PATENT DOCUMENTS

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2,173,960 A * 9/1939 Brock A47L 5/14
15/330

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5,090,974 A 2/1992 Kasper et al.
5,902,386 A * 5/1999 Gustafson A47L 5/365
15/353

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U.S.C. 154(b) by 352 days.

7,291,192 B1 * 11/2007 Lavasser A47L 5/22
55/406
2004/0068826 A1 * 4/2004 Howie A47L 9/188
15/353
2004/0098958 A1 * 5/2004 Roth A47L 7/0004
55/455

* cited by examiner

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(57) **ABSTRACT**

(30) **Foreign Application Priority Data**

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A separator for a vacuum cleaner has a cover part from which webs are projecting which are positioned along the circumference of the cover part at a spacing one behind the other with formation of through openings. At least some of the webs are without connection with each other at the end that is facing away from the cover part. The webs are elastically yielding transversely to the longitudinal direction. The webs are positioned in their mounting position with radial pretension on a spider which is fixedly seated on the motor shaft of the vacuum cleaner. Due to centrifugal forces occurring in operation of the vacuum cleaner as a result of the high rotary speed of the motor shaft, the webs of the separator are positioned with their free ends under high force on the spider. The separator is thus reliably entrained by the spider by friction.

(51) **Int. Cl.**
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B01D 46/00 (2006.01)
A47L 9/18 (2006.01)
(52) **U.S. Cl.**
CPC **A47L 9/102** (2013.01); **A47L 9/181**
(2013.01); **A47L 9/188** (2013.01); **B01D**
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